What is claimed is:

1. An implantable medical device with efficient recharging coil, comprising:

a housing having an interior cavity, a proximal face, and an electrical feedthrough;

electronics carried in the housing interior cavity and configured to perform a medical therapy;

a rechargeable power source carried in the housing interior cavity and coupled to the electronics;

a secondary recharging coil coupled to the electronics and rechargeable power source, the secondary recharging coil having a distal side; and,

a magnetic shield placed on a distal side of the receiving recharging coil to improve recharging efficiency.

2. The implantable medical device as in claim 1 wherein the magnetic shield improves recharging efficiency by improving electromagnetic coupling between the secondary recharging coil and a primary recharging coil.

3. The implantable medical device as in claim 2 wherein recharging efficiency is improved by increasing flux lines that couple with the receiving recharging coil from the primary recharging coil.

4. The implantable medical device as in claim 2 wherein the improved electromagnetic coupling is greater than 10 percent coupling efficiency at about one centimeter.

5. The implantable medical device as in claim 1 wherein recharging efficiency is improved by decreasing flux lines that couple with the housing.

6. The implantable medical device as in claim 5 wherein recharging efficiency is improved through reduced eddy currents in the housing.

7. The implantable medical device as in claim 6 wherein reduced eddy currents during recharging also reduces medical device temperature rise during recharging.

8. The implantable medical device as in claim 7 wherein the temperature rise of the implantable medical device during recharging is less than two degrees Celsius.

9. The implantable medical device as in claim 9 wherein the magnetic shield is located between the secondary recharging coil and the electronics.

10. The implantable medical device as in claim 1 wherein the magnetic shield is a material with high magnetic permeability.

11. The implantable medical device as in claim 10 wherein the magnetic shield is selected from the group consisting of: amorphous metal film, amorphous metal wire, and magnetic alloy.

12. The implantable medical device as in claim 1 wherein the magnetic shield includes eddy cuts to reduce eddy current flow through the magnetic shield.

13. The implantable medical device as in claim 1 wherein the magnetic shield has a central opening.

14. The implantable medical device as in claim 1, further comprising a first insulator placed between a first magnetic shield and a second magnetic shield.

15. The implantable medical device as in claim 14, further comprising a second insulator placed between a second magnetic shield and a third magnetic shield.

16. The implantable medical device as in claim 14 wherein the first insulator and a second insulator are selected from the group consisting of: plastic, mylar, and tape.

17. The implantable medical device as in claim 1 wherein the secondary recharging coil is carried on the proximal face of the housing and the magnetic shield is placed between the receiving recharging coil and the proximal face of the housing.

18. The implantable medical device as in claim 1 wherein the secondary recharging coil is an external secondary recharging coil located away from the housing.

19. The implantable medical device as in claim 1 wherein the receiving recharging coil is located in the housing interior cavity.

20. The implantable medical device as in claim 1 wherein the housing is an electric conductor.

21. The implantable medical device as in claim 15 wherein the housing is selected from the group consisting of: titanium, ceramic, and epoxy.

22. The implantable medical device as in claim 1 wherein the medical device is selected from the group consisting of: neuro stimulators, pacemakers, defibrillators, drug delivery pumps, diagnostic recorders, and cochlear implants.

23. An implantable medical device with efficient recharging coil, comprising:

a housing having an interior cavity, a proximal face, and at least one electrical feedthrough;

electronics carried in the housing interior cavity and configured to perform a medical therapy;

a rechargeable power source carried in the housing interior cavity and coupled to the electronics;

a receiving recharging coil coupled to the electronics and rechargeable power source; and,

a means for improving recharging efficiency placed on a distal side of the secondary recharging coil.

24. The implantable medical device as in claim 23 wherein recharging efficiency is improved by increasing flux lines that couple with the receiving recharging coil.

25. The implantable medical device as in claim 23 wherein recharging efficiency is improved by decreasing flux lines that couple with the housing.

26. An efficient recharging coil for an implantable medical device, comprising:

a secondary recharging coil having at least two leads coupleable to an implantable medical device; and,

a magnetic shield configured to be positioned on a distal side of the secondary recharging coil.

27. The implantable medical device as in claim 1 wherein the magnetic shield is a material with high magnetic permeability.

28. The efficient recharging coil as in claim 26, wherein the secondary recharging coil is positioned on an external surface of a housing and the magnetic shield is positioned between the secondary recharging coil and the external surface of the housing.

29. The efficient recharging coil as in claim 26, further comprising an insulator placed between a first magnetic shield and a second magnetic shield.

30. A method of enhancing electromagnetic coupling of an implantable medical device recharging coil, comprising:

positioning a secondary recharging coil in operational relationship to an implantable medical device;

positioning a magnetic shield on a distal side of the secondary recharging coil;

attracting electromagnetic flux lines from a primary recharging coil to the secondary recharging coil with the magnetic shield; and,

improving electromagnetic coupling between a primary recharging coil and a secondary recharging coil; and,

improving efficiency of energy transfer from the primary recharging coil to the secondary recharging coil.

31. The implantable medical device as in claim 1 wherein recharging efficiency is improved through enhanced electromagnetic coupling between the secondary recharging coil and a primary recharging coil.

32. The implantable medical device as in claim 2 wherein the enhanced electromagnetic coupling is greater than 10 percent coupling efficiency at about one centimeter.

33. The implantable medical device as in claim 1 wherein the magnetic shield is a material with high magnetic permeability.

34. The implantable medical device as in claim 11 wherein the magnetic shield is selected from the group consisting of: amorphous metal film, amorphous metal wire, and magnetic alloy.

35. The implantable medical device as in claim 1 wherein the secondary recharging coil is carried on the proximal face of the housing and the magnetic shield is placed between the receiving recharging coil and the proximal face of the housing.

36. The implantable medical device as in claim 1 wherein the secondary recharging coil is an external secondary recharging coil located away from the housing.

37. The implantable medical device as in claim 1 wherein the medical device is selected from the group consisting of: neuro stimulators, pacemakers, defibrillators, drug delivery pumps, diagnostic recorders, and cochlear implants.

38. A method of reducing temperature rise during recharging of an implantable medical device external recharging coil, comprising:

positioning a secondary recharging coil in operational relationship to an implantable medical device;

positioning a magnetic shield on a distal side of the secondary recharging coil;

reducing electromagnetic flux lines that couple with the housing;

reducing eddy currents in the housing caused by electromagnetic flux lines that couple with the housing; and,

reducing temperature rise during recharging because of reduced eddy currents in the housing.

39. The implantable medical device as in claim 1 wherein recharging efficiency is improved by decreasing flux lines that couple with the housing.

40. The implantable medical device as in claim 5 wherein recharging efficiency is improved through reduced eddy currents in the housing.

41. The implantable medical device as in claim 6 wherein reduced eddy currents during recharging also reduces medical device temperature rise during recharging.

42. The implantable medical device as in claim 7 wherein the temperature rise of the implantable medical device during recharging is less than two degrees Celsius.

43. The implantable medical device as in claim 1 wherein the magnetic shield is a material with high magnetic permeability.

44. The implantable medical device as in claim 11 wherein the magnetic shield is selected from the group consisting of: amorphous metal film, amorphous metal wire, and magnetic alloy.

45. The implantable medical device as in claim 1 wherein the medical device is selected from the group consisting of: neuro stimulators, pacemakers, defibrillators, drug delivery pumps, diagnostic recorders, and cochlear implants.